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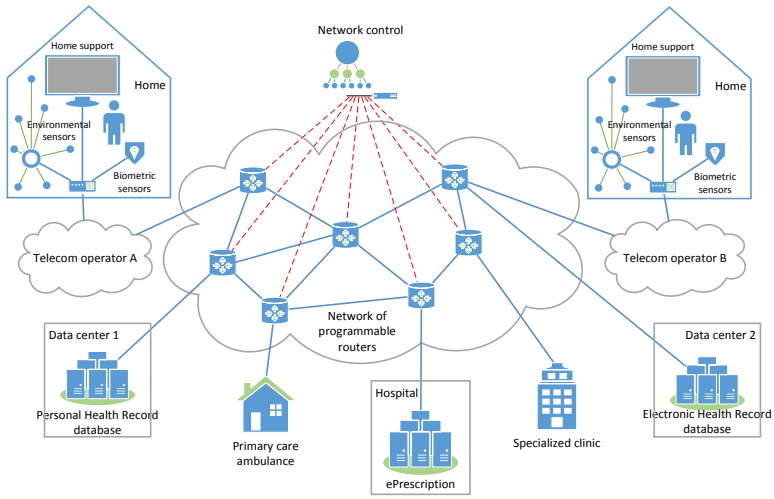
ICTGEN
RC.2.2.08-0044

Information and communication technology for generic and energy-efficient communication solutions with application in e-/m-health

ictgen.fer.hr

The project partners in the project "Information and communication technology for generic and energy-efficient communication solutions with application in e-/m-health (ICTGEN)" are the University of Zagreb Faculty of Electrical Engineering and Computing (FER) and Ericsson Nikola Tesla company, Croatia. The goal of the project is to strengthen the research, development and innovation capacity of FER for technology transfer and commercialisation in the area of design and development of complex ICT services.



The project will research and develop generic software components for future e-health and m-health services, to be delivered over a software defined network based infrastructure, in an energy-efficient way and taking into account the required quality of service requirements. Research objectives of the ICTGEN project include: a) to design a solution for integration and interoperability of Electronic Health Record (EHR) with imaging/radiology e-health systems and m-health systems, b) to develop generic components of software-defined networking infrastructure for ICT services delivery while taking into account user experience, c) to optimize energy efficiency of software-defined networking elements and wireless sensor networks in user environment, based on a model and measurements, and d) to build a laboratory environment and an integrated demo for conducting functional validation of designed application scenarios in a controllable network environment.

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Find out more about EU Funds at www.strukturnifondovi.hr.

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Advanced technologies in power plants and rail vehicles

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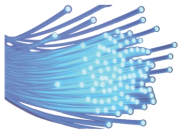
This project aims to develop new technologies and provide new perspectives with high commercialization potential for applications in power plants and rail vehicles. The project is organized in four research fields:



- *Advanced sensors technologies*
- *Advanced estimation and control algorithms in microgrids*
- *Multilevel converters and energy storage systems*
- *Driver assistance system*

The Advanced sensors technologies part aims to develop a fibre-optic system for distributed temperature measurements in power plants applicable in the electrical power sector and other ICT domains such as intelligent transport infrastructure, smart buildings, next-generation information systems, etc. It also aims to develop methods for advanced energy harvesting to be applied to sensor systems for the monitoring of power infrastructure, which provides a 'physical layer' for the implementation of networked embedded sensing systems, i.e. Internet of Thins (IoT), applied in all domains related to human activity, smart devices and smart environments.

The Advanced estimation and control algorithms in microgrids aims to develop an advanced battery management system, as well as the algorithm for prediction of renewable energy systems availability. These systems will be used for development of more advanced control concepts in microgrids with emphasis on residential, office, and public buildings.

The Multilevel converters and energy storage systems component part provides two proof-of-concepts, one for three level neutral point clamped converter and one for the energy storage system based on the supercapacitor, as well as a simulation model and a Hardware-In-the-Loop model for real time testing.

The Driver assistance system to be designed within this project comprises of a network of embedded computers and sensors together with software for data analysis and processing. This system will be integrated into a tram and interconnected with existing tram computer system via appropriate communication interface. The system's main task is detection and tracking of vehicles and pedestrians in the vicinity of the tram, and supporting the overall safety by producing a warning signal upon prediction of collision.

The main aim of all the research conducted within the *Advanced technologies in power plants and rail vehicles* project is to establish knowledge base and develop technologies with expected applications in various fields of modern technology in accordance with the next-generation needs.

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